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Garwin et al.

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[54] CALIBRATION OF A FORCE SENSING TYPE
OF DATA INPUT DEVICE

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178/18; 73/862.04

[58] Field of Search 364/571, 556, 558, 190;
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[56] References Cited

U.S. PATENT DOCUMENTS

- | | | | |
|-----------|---------|------------------|---------|
| 3,657,475 | 4/1972 | Peronneau et al. | 178/18 |
| 4,121,049 | 10/1978 | Roeber | 178/18 |
| 4,192,005 | 3/1980 | Kurtz | 364/558 |
| 4,340,777 | 7/1982 | DeCosta et al. | 178/18 |
| 4,352,159 | 9/1982 | Colby | 364/571 |
| 4,355,202 | 10/1982 | DeCosta et al. | 178/18 |
| 4,389,711 | 6/1983 | Hotta et al. | 364/556 |
| 4,435,616 | 3/1984 | Kley | 178/18 |

4,511,760 4/1985 Garwin et al. 178/18
4,514,688 4/1985 Whetstone 178/18
4,575,581 3/1986 Langberg 178/18
4,598,381 7/1986 Cucci 364/571
4,650,926 3/1987 Nakamura et al. 178/18

FOREIGN PATENT DOCUMENTS

1528581 10/1978 United Kingdom .

OTHER PUBLICATIONS

ANL-80-74 User Guide for Minpack-1, J. J. More et
al., Aug. 80, Argonne National Laboratory, Argonne,
IL.

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[57]

ABSTRACT

The calibration of a force sensing type data input device through the use of at least one correction developed by minimization of differences between an actual location of a pattern of test forces and a calculated location of the test forces where the calculation is on the basis of the effect of the test forces on the equilibrium of the device.

3 Claims, 1 Drawing Sheet

